

CHAPTER 1

INTRODUCTION

1. Purpose

This manual describes the topographic symbols and abbreviations authorized for use by all echelons in the interpretation of military maps, overlays, and related features and activities.

2. Scope

This manual is divided into four chapters.

a. Chapter 1 contains general information on the use of topographic symbols, gives the basic scales for topographic maps, defines topographic maps, and discusses map detail, map accuracy, and map colors.

b. Chapter 2 gives examples and illustrations of topographic symbols arranged by categories, such as drainage features, relief features, and roads.

c. Chapter 3 gives topographic abbreviations, their scope and application.

d. Chapter 4 discusses marginal information.

3. References

Appendix I is a list of publications which give detailed information on maps and mapping, foreign conventional signs and symbols, reference data for the various services, transportation and signal facilities, and abbreviations for administrative and electrically transmitted messages.

4. Symbols and Abbreviations

a. Some of the symbols appearing on published maps may not agree entirely with those shown in this manual, since it is necessary to devise or modify symbols to portray conditions or features which are unique to the area being mapped. Consequently, before any map is used, the symbol legend appearing in the margin should be carefully studied.

b. The symbols and abbreviations given in this manual are the result of standardization proceedings and are in general agreement with those employed by the British Army, the Canadian Army, the Aeronautical Chart and Information Service of the U.S. Air Force, the Hydrographic Office of the U.S. Navy, the U.S. Coast and Geodetic Survey, the U.S. Forest Service, the U.S. Geological Survey, and the Tennessee Valley Authority.

c. Department of the Army units engaged in map making will be guided by AR 117-5, by TM 5-230 so far as the symbols given as examples do not conflict with those given here, and by the specifications contained in technical publications prepared under the direction of the Chief of Engineers.

d. Abbreviations given in this manual are for topographic use only and in some instances conflict with those given in AR 320-50, which are authorized for use in military records, publications, correspondence, messages, and in field work. In accordance with AR 320-50, abbreviations will not be used if uncertainty may result.

e. The information contained herein is applicable without modification to both nuclear and nonnuclear warfare.

5. Use of Special Symbols

Where no symbol is prescribed for a specialized local feature, the map maker is authorized to use a special symbol, providing —

a. There is no conflict with symbols shown in this manual.

b. Any special symbol used is explained either in the legend of the map or by appropriate labeling within the body of the map, so that no uncertainty may result.

6. Scales of Topographic Maps

a. Maps fall into the following general scale categories:

Small scale 1:600,000 and smaller.

Medium scale Larger than 1:600,000
but smaller than
1:75,000.

Large scale 1:75,000 and larger.

b. Standard scales for Department of the Army topographic maps are 1:1,000,000, 1:250,000, 1:100,000, 1:50,000, and 1:25,000. Military city maps normally are published at the scale of 1:12,500. Photomaps normally are published at 1:25,000. General maps at scales smaller than 1:1,000,000 are issued for special purposes.

c. Depending upon the availability of mapping information and the importance of the area, the scale of 1:500,000 is sometimes substituted for 1:250,000.

d. All of the above types and scales of maps will not necessarily be available for a particular area. Their issue will be governed by military and logistic considerations.

e. Maps with scales different from those given above occasionally will be encountered. Usually, they are foreign military maps. The most common examples are 1:62,500 or 1:63,360 in place of 1:50,000; 1:125,000 in place of 1:100,000; and 1:253,440 in place of 1:250,000. In the United States, nonmilitary governmental mapping agencies may use other scales such as 1:24,000 or 1:31,680 in place of 1:25,000; and 1:48,000 or 1:62,500 in place of 1:50,000.

7. Topographic Maps

a. *Introduction.* A topographic map is a graphic representation to scale, horizontal and vertical, of some portion of the earth's surface, systematically plotted on a plane surface. The ideal situation would be realized if every feature on the portion of the earth being mapped could be shown in its true shape, orientation, and proportion. Unfortunately, such a representation is impossible. This is evident when one considers that on a map at the scale of 1:50,000, a square mile must be condensed into a small square approximately 1.27 by 1.27 inches. If every feature were plotted true to scale, the resulting map would be impossible to read, for many items would be drawn so

minutely as to be unrecognizable even with a magnifying glass. For a map to be intelligible, features must be indicated by symbols. Many of these must necessarily be exaggerated in size for legibility. For example, on a map at the scale of 1:50,000 the prescribed symbol for a small house covers an area corresponding to about 85 feet square, the scaled width of a road measures about 95 feet; the symbol for a single-track railroad occupies a width equivalent to about 165 feet on the ground. Consequently, only the landmarks and important features of an area can be shown. Those shown on a map represent the characteristic pattern of the area and are usually those most readily recognized in the field.

b. *Map Detail.* Map detail represents ground features as they existed at the date of map compilation or latest revision. Since man is continually building, demolishing, and changing ground features, the detail appearing on a map may not exactly match that appearing on the ground. This is especially true in developed areas. The amount of detail shown on a map increases with its scale. A map attempts to show the maximum of detail without impairing legibility. In areas of heavy cultural density, many of the less important items must be omitted. In areas of sparse density, fewer items are omitted. When deletions are necessary because of the density of detail, care is taken to retain the general pattern of the features in the area. For example, where all buildings of a group cannot be shown, those retained portray the general pattern of the group without exaggerating the area covered. Similarly, where numerous ditches, streams, levees, and the like exist, the less important are omitted and the more important are retained to show the characteristic pattern of the features in the area.

c. *Symbols.* So far as is practicable, a mapped feature is shown by the same symbol on maps of different scales, but certain modifications and departures are necessary because of varying map uses and scales. Normally, symbols resemble the features they represent. The center and the orientation of a symbol usually correspond to the true center and orientation of the feature represented. All line features such as roads, railroads, streams, power lines, and similar features retain, within

the limitations of scale, the variations of alignment which actually exist. Along such features as roads, the locations of buildings and other features are necessarily displaced because of the exaggerated size of the symbols. Reference to the positions of such features must be made with caution.

d. Accuracy of Maps. On a map of 1:1,000,000, a sixteenth of an inch represents approximately 1 mile; on a map of 1:250,000, a quarter of an inch represents approximately 1 mile. It is apparent, then, that on such maps it is impossible to obtain the precise accuracy in plotting possible on large-scale maps. Small- and medium-scale maps normally are compiled from the best available larger-scale maps. Since these sources vary in reliability, the map user should study the coverage diagram shown in the margin of the map to determine the general reliability of the map. On most large-scale maps of areas within the continental limits of the United States, 90 percent of all features shown are within 1/50 inch of their true geo-

graphic positions. The remaining 10 percent are within 1/20 inch. Ninety percent of the contours are accurate within one-half of the basic contour interval, and 90 percent of the spot heights (elevations of particular locations) are accurate within one-fourth of the contour interval. In compiling large-scale maps covering foreign areas, it is not always possible to achieve the high standards of accuracy obtainable on maps of the United States. The accuracy standards of such maps usually may be determined from the marginal coverage diagram.

e. Map Colors. Topographic symbols usually appear in characteristic colors: black for *cultural* (man-made) features other than roads, blue for *water* features, brown or gray for *relief* features, green for *vegetation*, and red for *road classifications*. Modifications of these colors occasionally are used to portray unique circumstances. Consequently, the symbol legend and other marginal information should be carefully studied before using any map.